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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,914	11/18/2003	Takeo Ito	245463US2SX DIV	4010
22850	7590	06/27/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			CANNING, ANTHONY J	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/714,914	Applicant(s) ITO ET AL.	
	Examiner Anthony J. Canning	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/14/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because of the following informalities: in line 2 “**an** mold release agent” should be corrected to read -**a** mold release agent-. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida et al. (U.S. 5,164,632).
4. As to claim 9, Yoshida et al. disclose a method of manufacturing an electron source device, including: subjecting a metal substrate to electrolytic oxidation, thereby forming an oxide substrate having a number of small through holes (see Fig. 2; column 3, lines 33-47); burying an electron-emitting material in the through holes of the oxide substrate (see Fig. 1, item 3; column 3, lines 11-14); forming a first electrode on one surface of the oxide substrate, the first electrode contacting the electron-emitting material (see Fig. 1, item 5; column 3, lines 21-25); and forming a second electrode on another surface of the oxide substrate, the second electrode insulated from the electron-emitting material (see Fig. 1, item 4; column 3, lines 13-17).
5. As to claim 10, Yoshida et al. disclose the method of manufacturing an electron source device, according to claim 9, wherein an electrolysis voltage is controlled, in the electrolytic

oxidation, to control the diameter of the small through holes (column 3, lines 34-47; Yoshida et al. disclose that a current density between 0.6 to 3 A/dm² is used to produce pores in diameter from 30 to 100 nm or less; the current density can be used to determine the applied voltage using the area of the aluminum sheet and its resistance).

6. As to claim 11, Yoshida et al. disclose the method of manufacturing an electron source device, according to claim 9, wherein an electrolysis time is controlled, in the electrolytic oxidation, to control the diameter of the small through holes (column 3, lines 34-47; the diameters of the holes are between 30 to 100 nm, and the time used during the electrolytic process is 5 to 60 minutes).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (U.S. 5,164,632) in view of Jin et al. (U.S. 5,648,699).

9. As to claim 12, Yoshida et al. disclose the method of manufacturing an electron source device, according to claim 9. Yoshida et al. fail to disclose that the electron-emitting material is buried in the through holes by introducing an organic substance into the through; and then baking the organic substance to carbonize the substance.

Jin et al. disclose that the electron-emitting material is buried in the through holes (see Fig 9, item 147; column 4, lines 58-67; column 5, lines 1-7; column 8, lines 30-36) by introducing an organic substance into the through holes (column 5, lines 8-15); and then baking the organic substance to carbonize the substance (column 5, lines 8-9; the examiner interprets heating the coating as baking). Jin et al. further disclose that introduction of an organic substance improves adhesion of the emitter particles (column 5, lines 11-13).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the method of manufacturing an electron source of Yoshida et al. to include an organic substance introduced into the through-holes, as taught by Jin et al., for the added benefit of improved adhesion of the emitter particles.

10. As to claim 14, Yoshida et al. disclose the method of manufacturing an electron source device, according to claim 9. Jin et al. further disclose that the electron-emitting material is buried in the through holes by vapor-depositing an organic substance in the through holes (column 5, lines 7-15; the application of the organic substance is through spray¹ coating). Jin et

¹ a jet of vapor or finely divided liquid

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al. further disclose that the organic substance improves adhesion of the emitter particles (column 5, lines 11-13).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the method of manufacturing an electron source of Yoshida et al. to include an organic substance introduced into the through-holes, as taught by Jin et al., for the added benefit of improved adhesion of the emitter particles.

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jin et al. (U.S. 5,648,699) in view of Jin et al. (U.S. 5,648,699) and in further view of Terai et al. (U.S. 3,935,349).

12. As to claim 13, Yoshida et al. and Jin et al. et al. disclose the method of manufacturing an electron source device, according to claim 12. Yoshida et al. and Jin et al. fail to disclose that the oxide substrate is coated with a mold release agent before the organic substance is introduced.

Terai et al. disclose a method of coating the surface of aluminum oxide with a mold release agent, in this case silane (see the Abstract). Terai et al. further disclose that coating with silane improves aluminum oxide's adhesive property.

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the method of manufacturing an electron source of Yoshida et al. to include a step of treating the insulating layer with a mold release agent, such as silane, as taught by Terai et al., for the added benefit of improved adhesive properties of aluminum oxide.

Prior Art

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Burgess et al. (U.S. 4,801,367) discloses a method for electroetching a metal material via oxidation to produce a desired shape.

Yoshida et al. (U.S. 5,648,699) discloses a method for added an organic substance to a field emitter display.

Contact Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Canning whose telephone number is (571)-272-2486. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh D. Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Canning *ac*

22 June 2005

Ashok Patel
ASHOK PATEL
PRIMARY EXAMINER